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Les gens. La découverte. L'innovation.



Natural Sciences and Engineering
Research Council of Canada

Conseil de recherches en sciences
naturelles et en génie du Canada

Canada

2013 Research Grants Competition

Computer Science Evaluation Group (1507)

Presentation to Heads and Chairs

Annual Meeting of the Canadian Association of Computer Science
May 16, 2013 – Québec, QC



Cette présentation est disponible en français



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Session's Outline

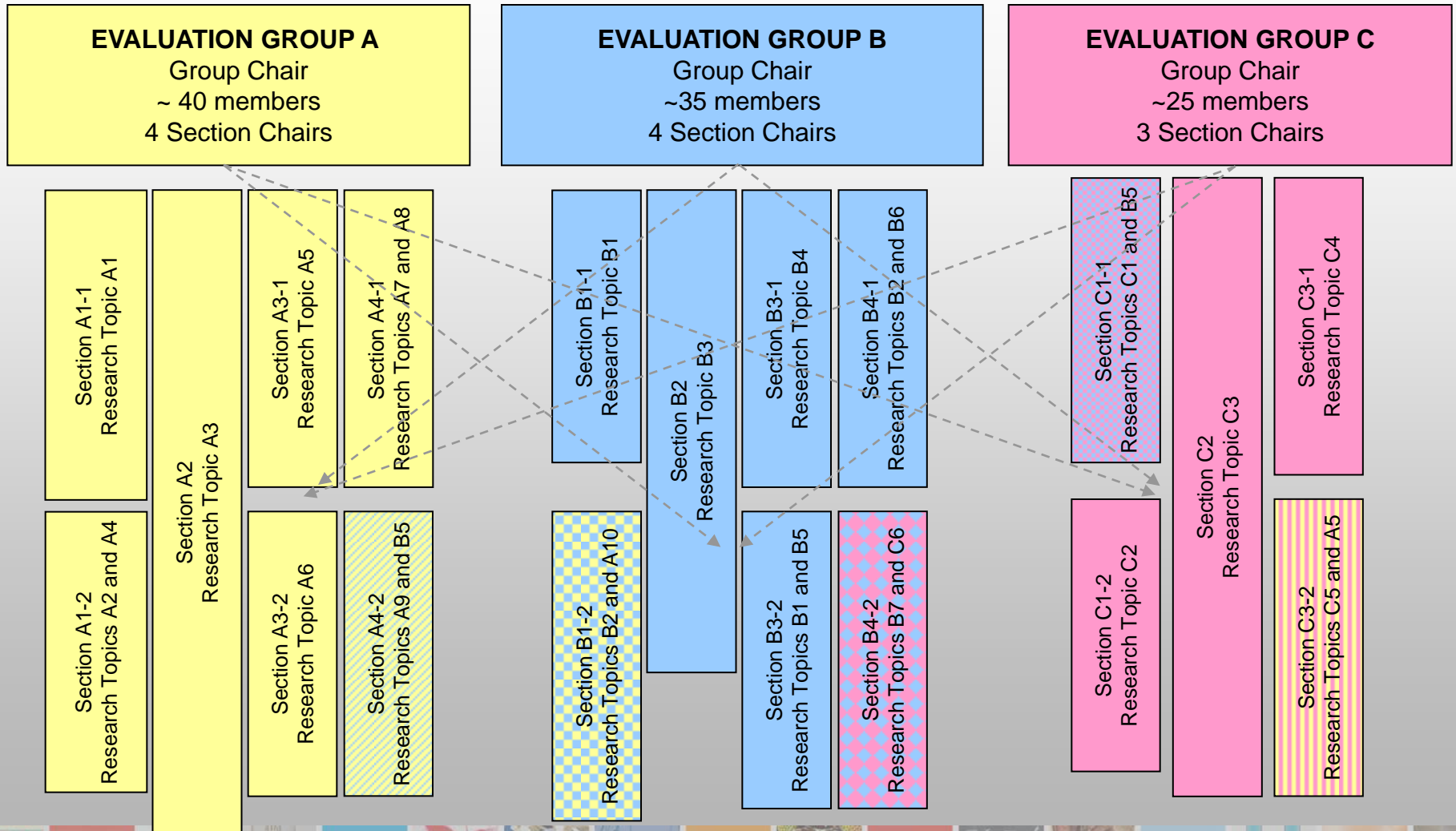
- General Context of 2013 Competition
- Computer Science Evaluation Group
- Overview of the Discovery Grants Competition Process
- Discovery Grants Competition Results
- Discovery Accelerator Supplements Competition
- Research Tools and Instruments Competition
- **Important information for the 2014 Competition**

2013 Discovery Grants Competition

General Context

- Fourth year of implementation of Conference model, as recommended by the Grant Selection Committee Structure Review.
 - 12 Evaluation Groups.
 - Flexible composition of Sections to ensure comprehensive review of applications.
 - Members from different Evaluation Groups joined various Sections to review applications covering topics that cross the traditional boundaries between disciplines.

Conference Model Overview



Conference Model

How It Works

- Inside an Evaluation Group, applications are assessed within Sections.
 - Reviewers are drawn from the Evaluation Group’s membership as a function of the members’ expertise and the need to ensure balanced reviews.
- Members from different Evaluation Groups could participate in the review of any application, if required to ensure a comprehensive review.
 - Joint reviews.
 - Primary Evaluation Group: leads the review (“home” of application).
 - Secondary Evaluation Group(s): provides expert reviewer(s).
 - Reviewer(s) from secondary Evaluation Group(s): among the five reviewers assessing the application (full assessment, participation in deliberations, and vote).

List of Evaluation Groups

- Genes, Cells and Molecules (1501)
- Biological Systems and Functions (1502)
- Evolution and Ecology (1503)
- Chemistry (1504)
- Physics (1505)
- Geosciences (1506)
- **Computer Science (1507)**
- Mathematics and Statistics (1508)
- Civil, Industrial and Systems Engineering (1509)
- Electrical and Computer Engineering (1510)
- Materials and Chemical Engineering (1511)
- Mechanical Engineering (1512)

2013 Discovery Grants Competition

General Context

- Two-stage review process as recommended by the International Review of the Discovery Grants Program.
 - In the first step, the Evaluation Group assesses and rates the merit of each application based on three selection criteria, consistently using the evaluation indicators.
 - The ratings lead to the grouping of applications into categories ("bins") of comparable overall merit.
 - In the second step (once all deliberations are completed), the Executive Committee balances the amounts to be awarded to the merit bins in relation to the number of applicants funded. This is done at the *global bin level* and no specific application is singled out or discussed.

2013 Discovery Grants Competition

General Context

- Evaluation Groups do not make direct funding recommendations for any individual application.
 - The Executive Committee recommends the amounts associated with each funded bin.
- Process separates the merit assessment from the funding recommendation.
- Merit assessment of applications decoupled from the previous grant held by applicants.
- Applicants, new and established, with superior contributions are recognized and awarded funding at appropriate level, within the context of a competition with a constrained budget.

Computer Science Evaluation Group (1507)

2013 Membership

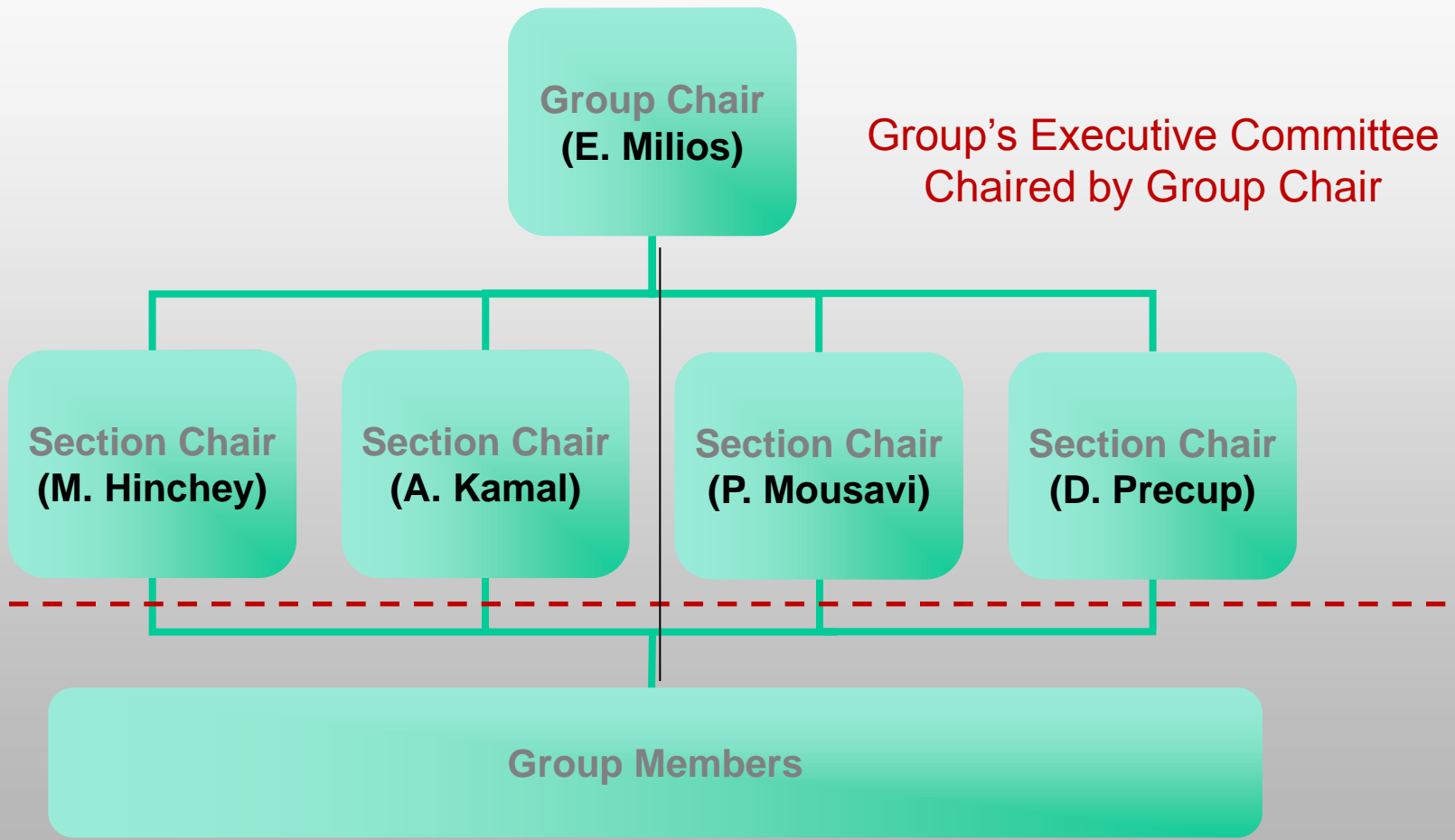
- **Evangelos Milios (Group Chair)**
Dalhousie University
- **Mike Hinchey (Section Chair)**
University of Limerick
- **Ahmed Kamal (Section Chair)**
Iowa State University
- **Parvin Mousavi (Section Chair)**
Queen's University
- **Doina Precup (Section Chair)**
McGill University
- **Eric Allender**
Rutgers University
- **Ravin Balakrishnan**
University of Toronto
- **Srinivas Bangalore**
AT&T Labs Research
- **Rama Chellappa**
University of Maryland
- **Wolfgang Banzhaf**
Memorial University of Newfoundland
- **Gautam Biswas**
Vanderbilt University
- **Sajal Das**
University of Texas at Arlington
- **Amy Felty**
University of Ottawa
- **Russell Greiner**
University of Alberta
- **Yann-Gaël Guéhéneuc**
École Polytechnique de Montréal
- **Michel Habib**
Université Paris Diderot
- **Xiangji (Jimmy) Huang**
York University
- **Sophie Laplante**
Université Paris Diderot

Computer Science Evaluation Group (1507)

2013 Membership (cont'd)

- **Kevin Leyton-Brown**
University of British Columbia
- **Anna Lubiw**
University of Waterloo
- **Peter Marbach**
University of Toronto
- **Volker Markl**
Technische Universität Berlin
- **George Mihaila**
Google, Inc.
- **Torsten Möller**
Simon Fraser University
- **Kaisa Nyberg**
Aalto University
- **Dorina Petriu**
Carleton University
- **Frank Piessens**
Katholieke Universiteit Leuven
- **Makan Pourzandi**
Ericsson Canada Inc.
- **Przemyslaw Prusinkiewicz**
University of Calgary
- **Cenk Sahinalp**
Simon Fraser University
- **Renate Schmidt**
University of Manchester
- **Hans-Peter Seidel**
Max-Planck-Institut für Informatik
- **Hans Vangheluwe**
McGill University
- **Shengrui Wang**
Université de Sherbrooke
- **Yiyu Yao**
University of Regina

Organization of Contributors to the Peer Review Process – EG 1507



Research Topics and Sections in EG 1507

SECTION - COMPUTER APPLICATIONS

- CS 01 - Web-enabled Applications & Services
- CS 08 - Information Systems
- CS 10 - Data Management
- CS 16 - Web-based Systems

SECTION - COMPUTER METHODOLOGIES

- CS 02 - User Adaptive Systems
- CS 17 - Human Computer Interaction
- CS 18 - Artificial Intelligence
- CS 19 - Computer Graphics & Visualization
- CS 21 - Computer Vision & Robotics

SECTION - COMPUTER SYSTEMS

- CS 06 - Computer Networks
- CS 09 - Security & Privacy
- CS 11 - Programming Languages
- CS 12 - Software Engineering
- CS 13 - Formal Methods
- CS 14 - Computing Systems
- CS 15 - Parallel and Distributed Computing

SECTION - THEORETICAL COMPUTER SCIENCE

- CS 03 - Mathematical Computing
- CS 04 - Theory of Computing
- CS 05 - Algorithms and Data Structures
- CS 07 - Quantum Computing
- CS 20 - Bioinformatics & Bioinspired - Computing

Major Pre-Competition Activities

2013 Discovery Grants Competition

▪ August

- Applicants submitted Form 180, *Notification of Intent to Apply*.
- Orientation material provided to members.

▪ September - October

- Members provided comfort ratings to review each application.
- Preliminary assignment of applications to Sections was made.
- Chairs held teleconferences:
 - To confirm assignment of applications to Sections.
 - To assess need to seek/offer additional expertise from/to other EGs for each application and discuss possible transfers to/from other EGs.
- Chairs identified 1st internal reviewer for each application.
- First internal reviewers selected 5 external referees for each application.
- NSERC contacted external referees (all 5 for each application) to probe their willingness to participate; followed-up with first internal reviewers if additional names were needed.

Major Pre-Competition Activities

2013 Discovery Grants Competition

■ November / December

- Chairs' meeting in Ottawa (November 17, 2012) – Based on the full proposals:
 - Determined the most appropriate Evaluation Group to take the lead for the review of a certain number of applications.
 - Finalized the Section assignment of a few applications within the Computer Science Evaluation Group.
- New members' orientation meeting in Ottawa (November 18, 2012).
- Assignment of 2nd internal reviewer and additional 3 readers (to add to 1st internal reviewer) for each application – 5 internal reviewers in total.
- Establishment of competition schedule.
- Applications and assignments provided to members.

Organization of Competition Week

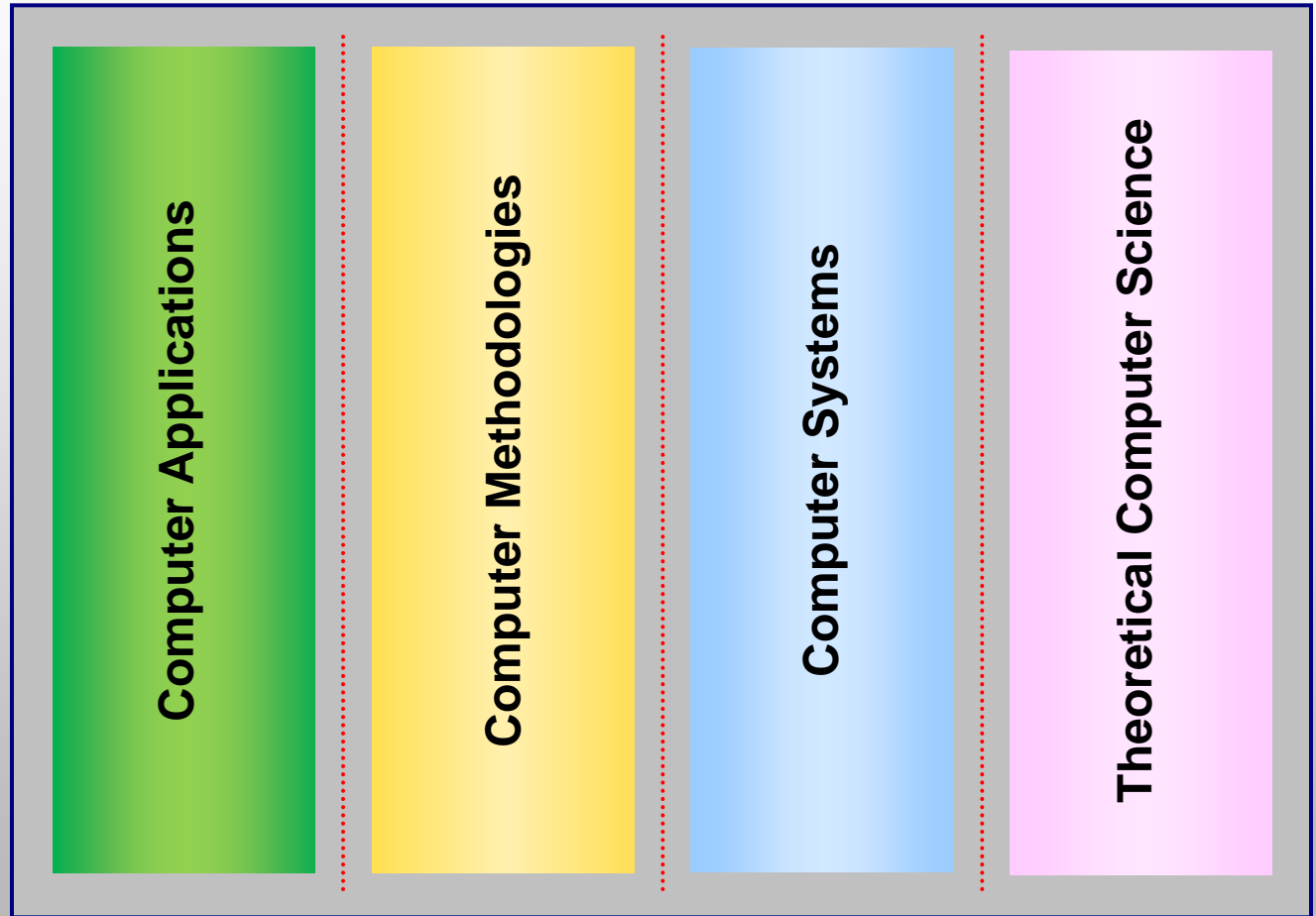
2013 Discovery Grants Competition

- Monday, Feb. 18th to Friday, Feb. 22nd
 - Orientation.
 - Review of Discovery Grants applications.
 - Policy meeting.
- Saturday, Feb. 23rd
 - Executive Committee meeting.

Organization of Competition Week

2013 Discovery Grants Competition

Conference
model
with **parallel**
streams



Schematic representation of the Streams organization

Overall Statistics¹ (All EGs)

2013 Discovery Grants Competition

	Success rate (%)	Average Grant
Early-Career researchers (ECR)	60	\$27,659
Established researcher (ER) applicants who held a grant	76	\$36,062
Applicant not previously holding a grant ²	30	\$27,597

1. Includes Discovery and Subatomic Physics (Individual and Team) Grants

2. Includes returning unfunded applicants and experienced researchers submitting a first application

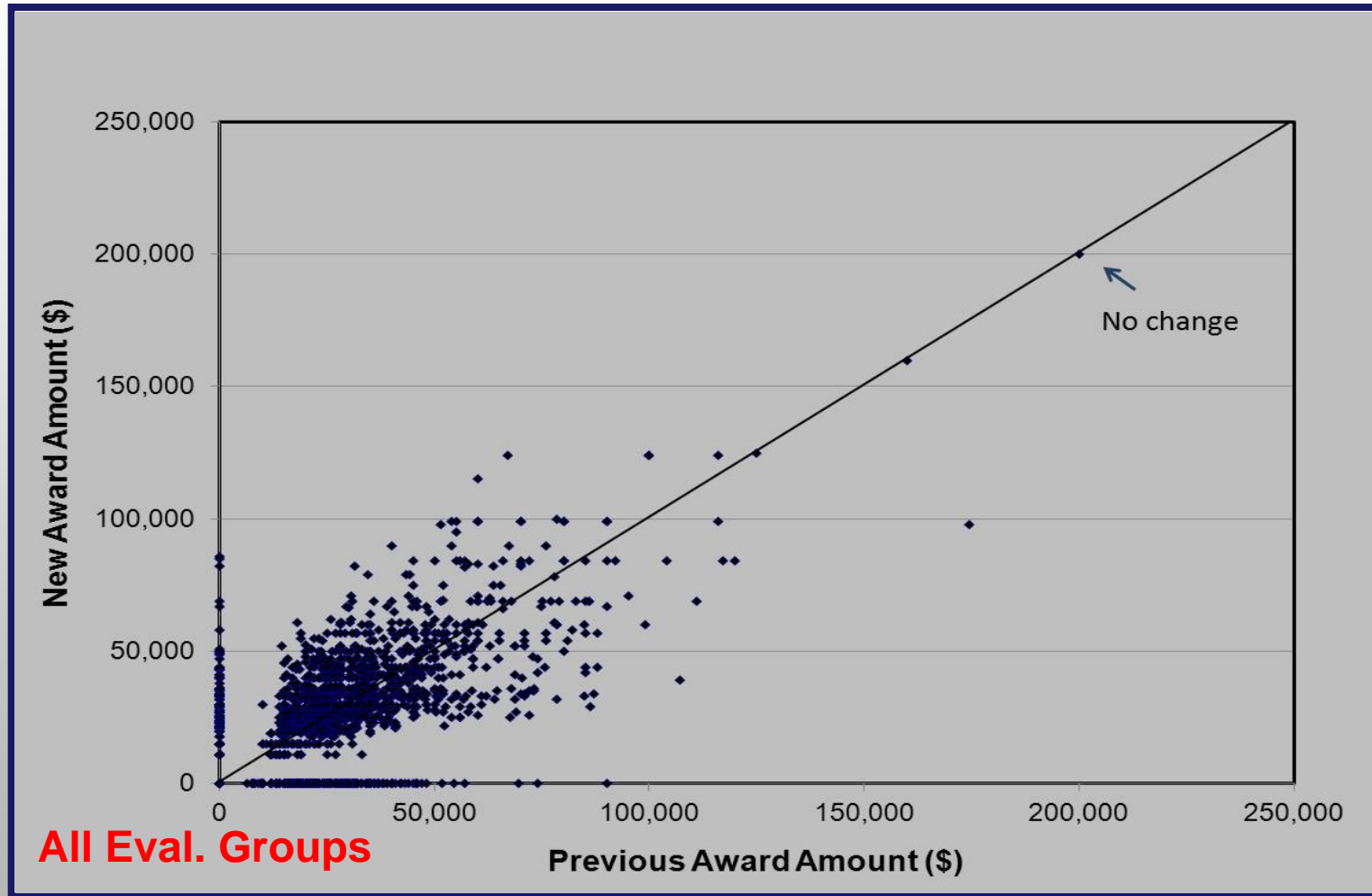
- 3,455 applications in total.
- Going into the competition, there were 1,853 renewal applicants who held grants of, on average, \$30,596; after the competition, there are 2,026 funded researchers at an average grant level of \$33,472.

Overall Statistics (All EGs)

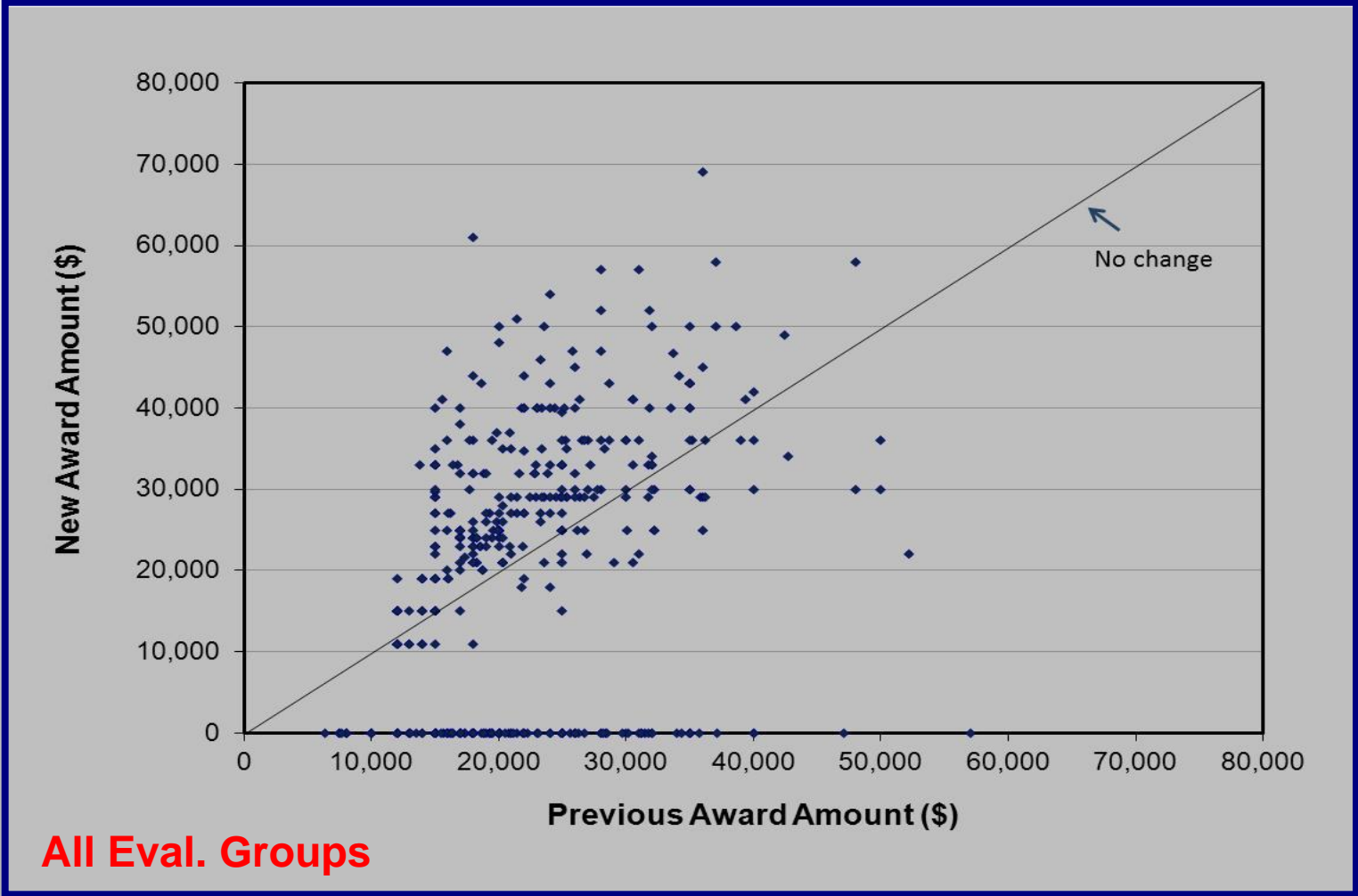
2013 Discovery Grants Competition

- NSERC continued to put a strong emphasis on giving Early-Career Researchers (ECRs) a chance to demonstrate their potential and exceeded the minimum target success rate of 50% recommended in the International Review of the NSERC Discovery Grants Program.
- In *Budget 2011*, NSERC was allocated additional funding "to support outstanding research in the natural sciences and engineering fields, such as the Strategy for Partnerships and Innovation (SPI)." NSERC is devoting half of this money to enhance the Discovery Grants of ECRs in the form of supplements to their grants.
- These supplements of a value of up to \$5,000 per year are included in the awarded amounts and reflected in the statistics presented in these slides.

Change in Grant Level for all Est. Researchers 2013 Discovery Grants Competition



Change in Grant Level for all 1st Renewals 2013 Discovery Grants Competition



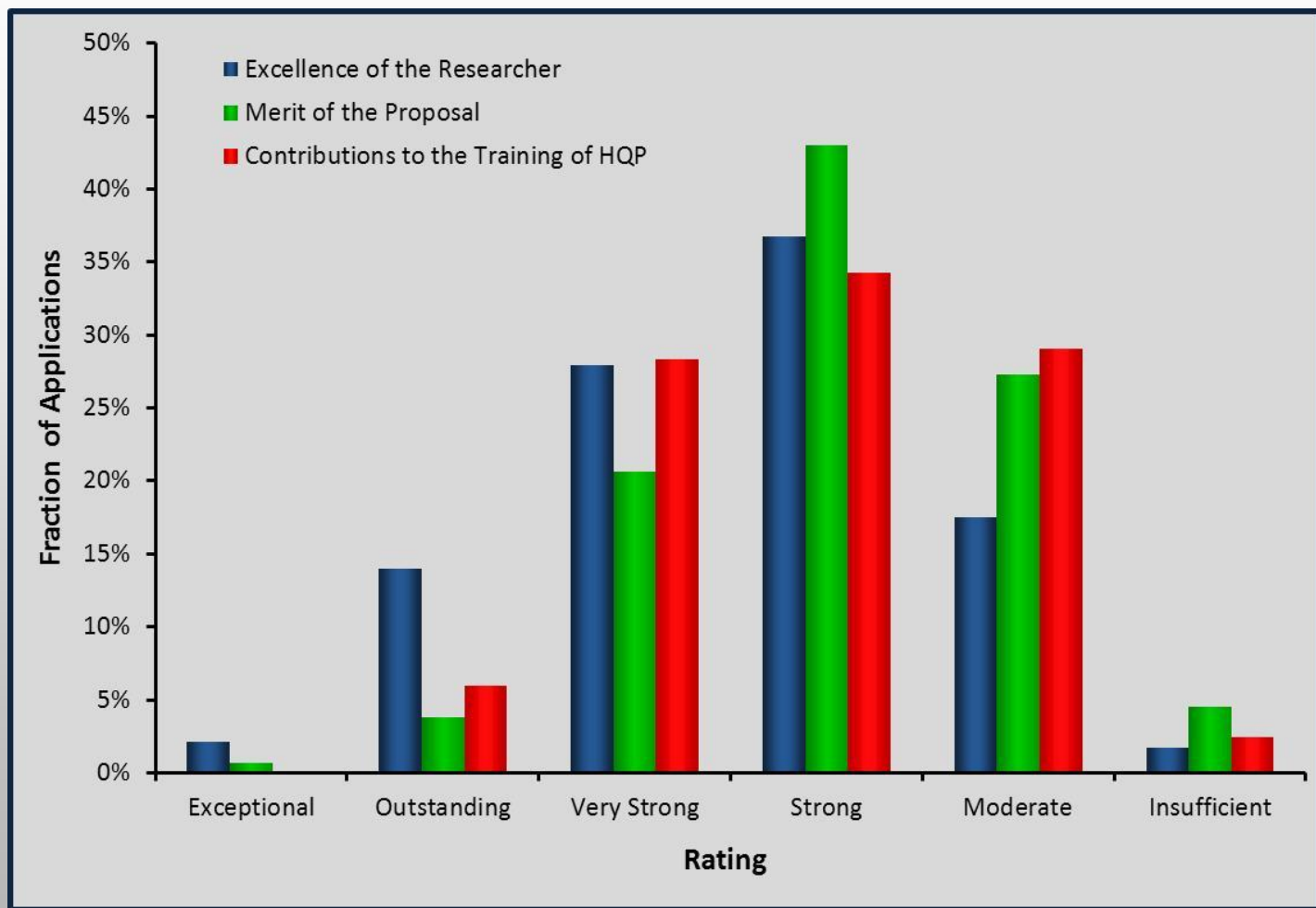
Results and Statistics – **Computer Science** 2013 Discovery Grants Competition

Discovery Grants	Early-Career Researchers	Established Researchers Renewals	Established Researchers Not Holding a Grant
Number of Applications	33	176	77
Number of Awards	25	143	22
Success Rate	76%	81%	29%
Average Grant	\$20,800	\$27,566	\$19,636
Total Budget	\$520,000	\$3,942,000	\$432,000

Overall S/R: 66%

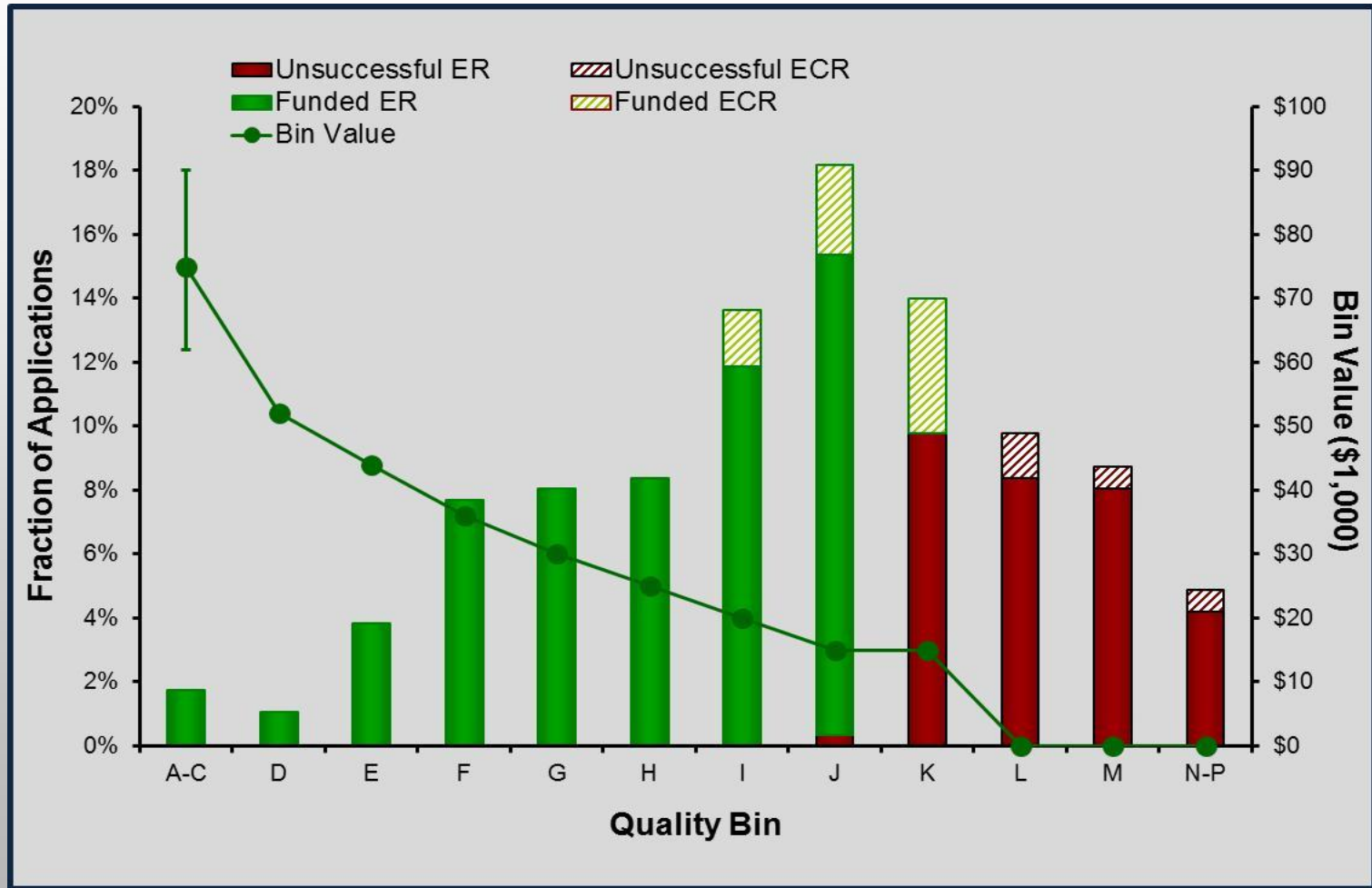
Results and Statistics – Computer Science

2013 Discovery Grants Competition



Results and Statistics – Computer Science

2013 Discovery Grants Competition



Results and Statistics – **Computer Science**

2013 Discovery Grants Competition

- Always a challenging task of balancing the amounts to be awarded (i.e., assigned to merit bins) in relation to the number of applicants funded.
- **For Computer Science:**
 - ER applicants supported down to merit category J. All applicants in category J were supported.
 - ECR applicants supported down to merit category K. All ECR applicants in category K were supported.

Results and Statistics

2013 Discovery Grants Competition

http://www.nserc-crsng.gc.ca/Professors-Professeurs/DiscoveryGrants-SubventionsDecouverte/Index_eng.asp

Discovery Accelerator Supplements

2013 Competition

- Provide substantial and timely additional resources to a small group of researchers to maximize the impact of *superior* discovery research programs that explore *high-risk transformational* concepts.
 - Transformational research: innovative approaches that can accelerate a research program in new directions and/or have great potential for major breakthroughs.
- Require researchers to have a *well-established* research program.
- *Timeliness* of DAS support relates to the potential for the researcher to capitalize on an opportunity (accelerate progress, maximize impact), such as a recent research breakthrough, a paradigm shift or a new strategy to tackle a scientific problem or research question.

Discovery Accelerator Supplements

2013 Competition

- \$120,000 - typically over three years.
 - Expand the recipient's research group (i.e., students, postdoctoral fellows, technicians);
 - Purchase, or to have access to, specialized equipment; or
 - Other initiatives/resources that would accelerate the progress of their research program.
- Up to 125 Supplements per year; majority is in one of the four priority areas identified by the Federal Government: information and communications technologies; environmental science and technologies; manufacturing; and natural resources and energy.
- Each EG directly assesses and recommends its nominees, in agreement with a set quota.
- **Quota of sixteen (16) supplements for Computer Science EG**

Discovery Accelerator Supplements

2013 Competition

- During the Discovery Grants deliberations, applicants could be put forward as nominees by reviewers. In such cases, nominees were discussed and rated.
- After the competition, using the ratings, the nominees were ranked.
- The Executive Committee then reviewed the Discovery Grants review material (applications, contributions, external referee reports) of the DAS nominees.
- In a teleconference held in early March, the Executive Committee reviewed and discussed the top two-thirds (ranking) of DAS nominees against the program's objective and criteria.
- A final merit-based ranked list was generated at the end of this review.

Research Tools & Instruments

2013 Competition

- Review carried out by an *ad hoc* review Committee

- **Joel Martin (Chair)**

National Research Council of Canada

- **Anup Basu**

University of Alberta

- **Michael Bauer**

University of Western Ontario

- **Raouf Boutaba**

University of Waterloo

- **Michel Desmarais**

École Polytechnique de Montréal

- **Kirk Jordan**

IBM, U.S.A.

- **Ahmed Karmouch**

University of Ottawa

- **Guy Lapalme**

Université de Montréal

- **Daniel Lemire**

Télé-université, Université du Québec

- **Patrick Schaumont**

Virginia Polytechnic Institute and State University

- **Robert St. Amant**

North Carolina State University

- **Marcelo Wanderley**

McGill University

Evangelos Milios, *ex officio* (observer)

Research Tools & Instruments

2013 Competition

- One Lead reviewer and four Readers assigned to each application.
- Members submitted ratings in a forced flat distribution in advance of the deliberations.
- Scores were compiled; all applications that fell in the middle tier of the rankings, in addition to any flags (members; split votes), were discussed during the deliberations.
- Deliberations held via teleconference on January 24th.
- Following deliberations, members could revise any of their individual scores, while a forced flat distribution had to be maintained by each member.

Research Tools & Instruments

2013 Competition Results

Research Tools & Instruments (Category 1)	EG 1507
Number of Applications	46
Number of Awards	14
Success Rate	30.4%
Funding Rate	23.3%
Total Budget (Awarded)	\$699,475

Reminder: The budget of the RTI program comes mostly from year-end funds

Important Information for the 2014 Competition

Changes in Application Process for Discovery Grants

- **Major changes** to electronic submission system for grant applications to the 2014 Discovery Grants Competition.
- Applicants will be required to familiarize themselves with new tools and interfaces and to complete a new CV, we recommend that you **start preparing your grant application as soon as possible**.

Changes in Application Process for Discovery Grants

- Notification of Intent to Apply (NOI) and full application must be submitted through NSERC's new [Research Portal](#). 
- Applicants and co-applicants must complete and submit NSERC's version of the [Canadian Common CV \(CCV\)](#) at the NOI and application stages. 
- Notification of Intent to Apply (NOI) must be submitted to NSERC by the **deadline date of August 1, 20:00 Eastern.** 
- No NOI by deadline = Not possible to submit a full application.

Changes in Application Process for Discovery Grants

- Instructions are available on NSERC's Web site.
- Posting of updated literature will be ongoing over the next few months.
 - Researchers are encouraged to visit NSERC's Web site and review updated instructions.
- Since completing the entire CCV for the first time can be tedious, applicants to the 2014 competition should:
 - **Start preparing their CCV as soon as possible.**
 - Focus on entering the information (e.g., contributions) for the last **six years** first. The remaining information can be entered at a later time.
 - Focus on the NSERC "template". There are several data elements in the CCV that other agencies wish to collect, but NSERC does not.

Changes in Application Process for Research Tools & Instruments Grants

- Starting this year, NSERC will be holding a smaller-scale national RTI competition in which universities are provided with a quota of applications that they can submit to NSERC.
- This change comes as a result of the extensive consultations with the research community on the future of the RTI Grants Program.
- The quotas to universities are based on the number of NSERC-funded researchers supported at each institution, with a minimum quota of two applications.
- The NSERC **criteria** for evaluation **remain the same**.

Changes in Application Process for Research Tools & Instruments Grants

- To apply to the RTI program, researchers must first submit an application to their institutions, by the internal deadlines of the latter.
- Each institution will perform its own internal review process and submit the selected applications to NSERC by the **October 25** deadline.
- NSERC continues to receive the **RTI** applications (**Form 101** and **Form 100**) through the NSERC on-line system.
- The updated program description and instructions will be available at the beginning of August.

Communication Tools for the Discovery Grants Program (Reminder)

- Since 2011, new ways to communicate program information and details about the peer review process to prospective applicants.
- Two [videos](#) are available in the [Professors](#) section of NSERC's Web site.
 - Tips on applying for an NSERC Discovery Grant.
 - Demystifying the review process for NSERC Discovery Grants.

Resources

- Program Officer overseeing the Computer Science Evaluation Group.
 - Reeta Sooknah; reeta.sooknah@nserc-crsng.gc.ca
- NSERC's Web site.
 - Research Portal:
http://www.nserc-crsng.gc.ca/ResearchPortal-PortailDeRecherche/Index_eng.asp
 - CCV:
<https://ccv-cvc.ca/indexresearcher-eng.frm>
 - Instructions:
http://www.nserc-crsng.gc.ca/ResearchPortal-PortailDeRecherche/Instructions-Instructions/index_eng.asp